

Postfix

Postfix ??????????????????????IBM?????????T.J. Watson Research Center?????????Wietse Venema?????sendmail?????????????????1990????????????????????????????

- [Postfix: Tips](#)
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Postfix: Tips

postfix

????/??/????

```
postfix check
postfix start
postfix stop
postfix reload
postfix flush
```

postconf - ??? main.cf ???

?????

```
postconf -n
```

????

??????

```
postconf -e "relayhost = [192.168.10.10]:587" \
"smtp_sasl_auth_enable = yes" \
"smtp_sasl_security_options = noanonymous" \
"smtp_sasl_password_maps = hash:/etc/postfix/sasl_passwd" \
"smtp_use_tls = yes" \
"smtp_tls_security_level = encrypt" \
"smtp_tls_note_starttls_offer = yes"
```

????

```
postconf -# smtp_use_tls
```

Test SMTP

[Swaks](#) is a featureful, flexible, scriptable, transaction-oriented SMTP test tool written and maintained by John Jetmore. It is free to use and licensed under the GNU GPLv2.

????

- [How to configure AWS SES with Postfix MTA](#)

Postfix Installation

With Docker

- [Github: docker-mailserver](#)
- [Docker: Running a Postfix container for testing mail during development](#)

Mailu

[Mailu](#) is a simple yet full-featured mail server as a set of Docker images. It is free software (both as in free beer and as in free speech), open to suggestions and external contributions. The project aims at providing people with an easily setup, easily maintained and full-featured mail server while not shipping proprietary software nor unrelated features often found in popular groupware.

Installation

Setting up the DNS

??? A ? MX ????????

```
mail.mydomain.com. IN A a.b.c.d
```

```
mydomain.com. IN MX 10 mail.mydomain.com.
```

DKIM/SPF & DMARC Entries

“ DKIM ? key ?? Admin ???? > Mail domains > Details > Generate keys?

Create the configuration file

????????? Docker ?????? `docker-compose.yml` , `mailu.env` ?

?? <https://setup.mailu.io/>

?????????

Step 1 - pick a flavor

- Compose

Step 2 - Initial configuration

- Mailu storage path: /mailu
- Main mail domain and server display name: mydomain.com

- Postmaster local part: admin
- Choose how you wish to handle security: letsencrypt
- Website name: Webmail - mailu
- Linked Website URL: https://mail.mydomain.com
- Enable the admin UI (and path to the admin UI): unCheck

??? admin UI ???????

Step 3 - pick some features

- Enable Web email client (and path to the Web email client): roundcube , /webmail

Step 4 - expose Mailu to the world

- IPv4 listen address: <the public address of the server>
- Subnet of the docker network: 192.168.203.0/24

????????? docker ? br-XXXX ???

- Public hostnames: mail.mydomain.com

Database preferences

- Which database back end would you like to use: sqlite

Download the configuration file

```
mkdir /mailu
cd /mailu
wget http://setup.mailu.io/1.7/file/64c4e566-dda9-4e09-abcb-9b8732dc873b/docker-compose.yml
wget http://setup.mailu.io/1.7/file/64c4e566-dda9-4e09-abcb-9b8732dc873b/mailu.env
```

Start the Compose project

```
cd /mailu
docker-compose -p mailu up -d
```

create the primary administrator user account

```
docker-compose -p mailu exec admin flask mailu admin myadmin mydomain.com THISISPASSWORD
```

Login as admin to verify

open the URL: `http://127.0.0.1:8080/ui` login with the account that you just created.

☰

Webmail - Mailu

Go to

✉ Webmail

💻 Client setup

🌐 Website

🛠 Help

➡ Sign in

Sign in

to access the administration tools

E-mail

Password

Sign in

Mail Management

Webmail

<https://mail.mydomain.com/webmail>



使用者名稱

使用者密碼

登入

Roundcube Webmail

user

```
docker-compose exec admin flask mailu user myuser mydomain.com 'password123'
```

user-delete

```
docker-compose exec admin flask mailu user-delete foo@mydomain.com
```


?? postfix ?????

????

??????? SMTP ?????????????????? Gmail ? ISP ??? SMTP
 ????????????????????????????????? Mailchimp?Sendgrid ?????????

???? postfix ????? SMTP ?????

???

- ?? docker ????
 - ???
- NOTE??????????? SPF Record??????????? Gmail ?????
- SPF Record
 - DKIM
 - DMARC
- ?????????????????????
 - ???

??????

- ??????????alang@mydomain.com
- ???mydomain.com
- ????? FQDN?smtp.mydomain.com
- ??????????????????????alang@mydomain.com

??? container

```
git clone https://github.com/a-lang/docker-postfix-smtp.git
docker pull alangtw/postfix-smtp:trusty
```

??????

run.sh?

- maildomain: ?????
- smtp_user: ?????????????????????

```
-e maildomain=mydomain.com -e smtp_user=alang@mydomain.com:thispassword \
```

?? SSL ??????

????? SSL ??????? container ???

????? container ???

?? container

```
chmod 0755 *.sh
./run.sh
```

?? SSL ???

NOTE: ? Host ??????

```
docker exec -it postfix openssl req -x509 -nodes -days 3650 -newkey rsa:2048 \
-keyout /etc/postfix/certs/smtp-mydomain-com.key \
-out /etc/postfix/certs/smtp-mydomain-com.crt
```

“ Tip:

??? .crt ? .key ??????????
- Host OS: data/certs
- Container OS: /etc/postfix/certs

SSL ?????? SMTP ??????????????????????

?? DKIM ??

? Host ??????

```
docker exec -it postfix sh -c "cd /etc/openskim/domainkeys && openskim-genkey -t -s mail -d mydomain.com"
```

“ Tip:

??? .private ????? .txt ??????????
- Host OS: data/domainkeys
- Container OS: /etc/postfix/domainkeys

.txt ?????????????? DNS Zone?

?? container

?? SSL ??? DKIM ?????? container ????????

```
./stop.sh
./run.sh
```

```
./stop.sh
./run.sh
```

??????????

??? container ???

postfix:

```
#> docker exec -it postfix ps -ef | grep postfix
```

root	54	51	0	07:11 ?	00:00:00 /bin/bash /opt/postfix.sh
root	125	1	0	07:11 ?	00:00:00 /usr/lib/postfix/master
postfix	127	125	0	07:11 ?	00:00:00 pickup -l -t unix -u
postfix	128	125	0	07:11 ?	00:00:00 qmgr -l -t unix -u

opendkim:

```
#> docker exec -it postfix ps -ef | grep opendkim
opendkim  55   51  0 07:11 ?        00:00:00 /usr/sbin/opendkim -f
opendkim  66   55  0 07:11 ?        00:00:00 /usr/sbin/opendkim -f
```

```
#> docker exec -it postfix ps -ef | grep opendkim
opendkim  55   51  0 07:11 ?        00:00:00 /usr/sbin/opendkim -f
opendkim  66   55  0 07:11 ?        00:00:00 /usr/sbin/opendkim -f
```

```
/var/log/mail.log:
```

```
#> docker exec -it postfix tail -20 /var/log/mail.log
Jan  2 07:11:14 a037fd779eaa opendkim[66]: OpenDKIM Filter v2.9.1 starting (args: -f)
Jan  2 07:11:15 a037fd779eaa postfix/master[125]: daemon started -- version 2.11.0, configuration /etc/postfix
```

```
#> docker exec -it postfix tail -20 /var/log/mail.log
Jan  2 07:11:14 a037fd779eaa opendkim[66]: OpenDKIM Filter v2.9.1 starting (args: -f)
Jan  2 07:11:15 a037fd779eaa postfix/master[125]: daemon started -- version 2.11.0, configuration /etc/postfix
```

?????? sasl ???????? saslauthd ??????????

“ Tip: mail.log ?? ... doesn't resolve to
XXX.XXX.XXX.XXX ??FQDN????????????????

????????????????

- ??????????
- ???????????????
- ?????????????????

?? SPF?DKIM ? DMARC ?????????????????????????????????

- [?????????DMARC????????????????](#)
- [?????????????????DMARC?SPF?DKIM](#)
- [?? Gmail ??????????????????????](#)

?? SPF ??

SPF ????????????????????????????????????? SMTP ?? IP???????? IP ?????????????????????

? DNS Zone ???? TXT ???????

- Type: TXT
- Name: mydomain.com ?? @
- Value:

“ Tip:

123.123.123.123 ? SMTP ????

????? IP ?????????????? ip4:123.123.123.123 ip4:111.111.111.111

?? SPF ?????????? Google: ?? SPF ??????????????

?? DKIM ??

?? DomainKeys Identified Mail (DKIM) ??????????????????

??
????????????? DKIM????????????????

DKIM ??? DKIM ?????????????? DNS
????????????????????????????????

DKIM ????????????????? SMTP ?????????????? DNS Zone ??

? DNS Zone ???? TXT ???????

- “ Tip:
- Value ??? p=???????????????????? mail.txt ??
- ?? DKIM ?????????? [Google: ?? DKIM ??????](#)

??
 ???

????????? SPF ? DKIM ?????????? DMARC?

“ Tip:

p=none??????????????
rua??? DMARC ???????????

?? DMARC ?????????? Google: [?? DMARC ??????????](#)

??????

??

??????

1. ? openssl ?? SMTP ?????????????? base64 ??

user: alang@mydomain.com

pass: yourpass

```
$> echo -ne '\000alang@mydomain.com\000yourpass' | openssl base64
AGFsYW5nQG15ZG9tYWluLmNvbQB5b3VycGFzcw==

# perl perl
# @ \
$> perl -MMIME::Base64 -e \ 'print encode_base64("\0alang\@mydomain.com\0yourpass");'
AGFsYW5nQG15ZG9tYWluLmNvbQB5b3VycGFzcw==
```

?? smtp ??

- SMTP ?????smtp.mydomain.com
- submission ???587

```
$> openssl s_client -quiet -starttls smtp -connect smtp.mydomain.com:587
depth=0 C = TW, ST = TY, L = TaoYuan, O = RAIDa, OU = Admin, CN = smtp.ossllab.tw
verify error:num=18:self signed certificate
verify return:1
depth=0 C = TW, ST = TY, L = TaoYuan, O = RAIDa, OU = Admin, CN = smtp.ossllab.tw
verify return:1
250 DSN
```

???????? base64??

```
AUTH PLAIN AGFsYW5nQG15ZG9tYWluLmNvbQB5b3VycGFzcw==
```

??????????

“ 235 2.7.0 Authentication successful

????? quit?

2. ?????? Gmail ??

???? Gmail ?????????????? Gmail ?????????? SPF/DKIM/DMARC ?????????????????????????

- ?????????????????? STARTTLS ?????????????????? Mozilla Thunderbird?
- Gmail ?????
- ?? alang@mydomain.com
NOTE????????????????????????????? Thunderbird ???

Thunderbird SMTP ???

- Port: 587
- SMTP ???smtp.mydomain.com
- ??????STARTTLS
- ?????????????? container ?????????????????? alang@mydomain.com

“ Tip:

????????? SSL/TLS?????????????????

?????????Thunderbird ?????????????????????? container ????????????

????? self-signed ?? thunderbird-smtp.png ?

?? DNS ??

? DNS ?????????? TXT ??????????????????????

?????????? Linux ??????????

SPF record

\$> dig +short TXT mydomain.com

DKIM key

\$> dig +short TXT mail._domainkey.mydomain.com

DMARC

\$> dig +short TXT _dmarc.mydomain.com

????????

GoDaddy SMTP

GoDaddy Setup: Office 365 Email: Enable SMTP Authentication

Sign in Email & Office Dashboard > Select one email account created (your@domain.name) > Advanced Settings > SMTP Authentication: ON

main.cf:

```
## for GoDaddy SMTP with Office 365
relayhost = [smtp.office365.com]:587
# SASL
smtp_sasl_auth_enable=yes
smtp_sasl_password_maps = hash:/etc/postfix/saslpasswd_godaddy
smtp_sasl_security_options = noanonymous
# TLS
smtpd_tls_key_file = /etc/postfix/tls/godaddy.key
smtpd_tls_cert_file = /etc/postfix/tls/godaddy.crt
smtpd_use_tls = yes
smtp_use_tls = yes
smtpd_tls_auth_only = no
smtp_tls_note_starttls_offer = yes
smtpd_tls_loglevel = 2
smtpd_tls_received_header = yes
smtpd_tls_session_cache_timeout = 3600s
tls_randome_source = dev:/dev/urandom
# Fix for MAIL-FROM
smtp_generic_maps = hash:/etc/postfix/generic
```

?? TLS ??

```
openssl s_client -quiet -starttls smtp -connect smtp.office365.com:587
```

```
depth=2 /C=US/O=DigiCert Inc/OU=www.digicert.com/CN=DigiCert Global Root CA
verify return:1
```

```
depth=1 /C=US/O=DigiCert Inc/CN=DigiCert Cloud Services CA-1
verify return:1
depth=0 /C=US/ST=Washington/L=Redmond/O=Microsoft Corporation/CN=outlook.com
verify return:1
250 SMTPUTF8
```

Ctrl + c ???

????? saslpasswd_godaddy???????:

```
smtp.office365.com your@domain.name:thisispass
```

```
chmod 0600 saslpasswd_godaddy
postmap hash:/etc/postfix/saslpasswd_godaddy
```

?????

```
cd /etc/postfix
mkdir tls
cd tls
openssl req -x509 -nodes -days 3650 -newkey rsa:2048 -keyout godaddy.key -out godaddy.crt
```

?? MAIL-FROM ??

?? /etc/postfix/generic

```
root@freepbx.sangoma.local your@sender.email.address
root your@sender.email.address
asterisk your@sender.email.address
```

?? generic

```
cd /etc/postfix
postmap generic
```

Domino Notes SMTP

?? TLS ??

```
openssl s_client -quiet -starttls smtp -connect 10.14.26.18:587
```

```
depth=0 C = TW, ST = Taiwan, L = Taoyuan, O = WIN Semiconductors Corp., OU = IT, CN =
tpemissp01.winfoundry.com, emailAddress = dominooa@winfoundry.com
verify error:num=20:unable to get local issuer certificate
verify return:1
depth=0 C = TW, ST = Taiwan, L = Taoyuan, O = WIN Semiconductors Corp., OU = IT, CN =
tpemissp01.winfoundry.com, emailAddress = dominooa@winfoundry.com
verify error:num=21:unable to verify the first certificate
verify return:1
250 PIPELINING
```

SMTP ???????

```
postconf -e "relayhost = [10.14.26.18]:587"
postconf -e "smtp_use_tls = yes"
```

Q & A

STARTTLS is required to send mail

```
Jul 27 02:41:51 freepbx postfix/smtp[20403]: B56021017FB13: to=<alang.hsu@gmail.com>,
relay=smtp.office365.com[52.96.165.34]:587, delay=10, delays=0.02/0.01/5.3/5.1, dsn=4.0.0, status=deferr
ed (host smtp.office365.com[52.96.165.34] said: 451 5.7.3 STARTTLS is required to send mail
[BN9PR03CA0153.namprd03.prod.outlook.com] (in reply to MAIL FROM command))
```

Solution:

- ?? main.cf ? TLS ??
- ???????

XXX not allowed to send as asterisk@freepbx.sangoma.local

```
Jul 27 04:11:53 freepbx postfix/smtp[31670]: warning: smtp.office365.com[52.96.28.178]:587: response longer
than 2048: 554 5.2.252 SendAsDenied; info...
Jul 27 04:11:53 freepbx postfix/smtp[31670]: E0E4010176933: to=<info@mediasystemsfl.com>,
relay=smtp.office365.com[52.96.28.178]:587, delay=313418, delays=313416/0.01/1.1/0.26, dsn=5.2.252,
status=bounced (host smtp.office365.com[52.96.28.178] said: 554 5.2.252 SendAsDenied;
info@mediasystemsfl.com not allowed to send as asterisk@freepbx.sangoma.local;
STOREDRV.Submission.Excep
```

```
tion:SendAsDeniedException.MapiExceptionSendAsDenied; Failed to process message due to a permanent  
exception with message [BeginDiagnosticData]Cannot submit message. 0.35250:14350000, 1.3667  
4:0A000000, 1.61250:00000000, 1.45378:02000000, 1.44866:EC2D0000, 1.36674:0E000000,  
1.61250:00000000, 1.45378:F12D0000, 1.44866:CA010000, 16.55847:9A120000,  
17.43559:000000002402000000000000  
000000000000000000, 20.52176:140F52951900103100000000, 20.50032:140F5295891700000000000000,  
0.35180:140F5295, 255.23226:0A000000, 255.27962:0A000000, 255.27962:0E000000, 255.31418:19000000,  
0.35  
250:1F001336, 1.36674:0A000000, 1.61250:00000000, 1.45378:02000000, 1.44866:58000000,  
1.36674:32000000, 1.61250:00000000, 1.45378:5D000000, 1.44866:01000000, 16.55847:D3000000,  
17.43559:0000  
00009803000000000000000000000000, 20.52176:140F52951900101062000000,  
20.50032:140F5295891700001F001A00, 0.35180:67000000, 255.23226:0A001380, 255.27962:0A000000,  
255.27962:32000000, 255.  
17082:DC040000, 0.27745:0B002900, 4.21921:DC040000, 255.27962:FA000000, 255.1494:03003600,  
0.38698:0F010480, 1.41134:46000000, 7.36354:0100000000000010B01000000, 0.37692:01000000,  
0.37948:860  
00000, 5.33852:00000000534D545000000000, 7.36354:0100000000000010907000000, 4.56248:DC040000,  
7.40748:0100000000000010B0A000000, 7.57132:0000000000000000003000000, 4.39640:DC040000,  
1.63016:320  
00000, 8.45434:EAFEADFEA5E644438592F8B9E718580F00000000, 1.46798:04000000,  
5.10786:0000000031352E32302E353435382E3032353A424C30505231364D423233333383A39333326136313564  
2D616239372D346165312D623  
030362D3234323361383536363439313A3332323631360093001000000000,  
7.51330:2A6B5D23866FDA0800000000, 0.39570:07000000, 1.55954:0A000000, 0.49266:0200  
Jul 27 04:11:53 freepbx postfix/cleanup[31676]: AC9D41016F023: message-  
id=<20220727041153.AC9D41016F023@freepbx.sangoma.local>  
Jul 27 04:11:53 freepbx postfix/bounce[31675]: E0E4010176933: sender non-delivery notification:  
AC9D41016F023  
Jul 27 04:11:53 freepbx postfix/qmgr[27367]: AC9D41016F023: from=<>, size=8634, nrcpt=1 (queue active)  
Jul 27 04:11:53 freepbx postfix/qmgr[27367]: E0E4010176933: removed  
Jul 27 04:11:53 freepbx postfix/local[31678]: AC9D41016F023: to=<asterisk@freepbx.sangoma.local>,  
relay=local, delay=0.02, delays=0.01/0.01/0/0, dsn=2.0.0, status=sent (delivered to mailbox)  
Jul 27 04:11:53 freepbx postfix/qmgr[27367]: AC9D41016F023: removed
```

Solution:

GoDaddy SMTP ????? sender ????????? postfix ?????????????????????? generic
 ????????????

openssl ???????

???????????????? 1 ~ 2 ?????? TLS ?????

write:errno=104

??????????

depth=2 /C=US/O=DigiCert Inc/OU=www.digicert.com/CN=DigiCert Global Root CA
verify return:1
depth=1 /C=US/O=DigiCert Inc/CN=DigiCert Cloud Services CA-1
verify return:1
depth=0 /C=US/ST=Washington/L=Redmond/O=Microsoft Corporation/CN=outlook.com
verify return:1
250 SMTPUTF8

certificate verification failed

“ postfix/smtp[17989]: certificate verification failed for
10.14.26.18[10.14.26.18]:587: untrusted issuer
/DC=com/DC=winfoundry/CN=win-root

???? SMTP Server????????????????????????????????????

???????????????????? SMTP Server ?????? CA ????????? postfix ????? CA ??

TLS handshake failed

STARTTLS=client, error: connect failed=-1, SSL_error=5, errno=104, retry=-1
ruleset=tls_server, arg1=SOFTWARE, relay=tpemissp01.winfoundry.com, reject=403 4.7.0 TLS handshake
failed.
...relay=tpemissp01.winfoundry.com. [10.14.26.18], dsn=4.0.0, stat=Deferred: 403 4.7.0 TLS handshake failed.

?? openssl ??? SMTP ??? TLS ???????

sSMTP

sSMTP - Simple SMTP

sSMTP is a simple MTA to deliver mail from a computer to a mail hub (SMTP server). sSMTP is simple and lightweight, there are no daemons or anything hogging up CPU; Just sSMTP. Unlike Exim4, sSMTP does not receive mail, expand aliases, or manage a queue.

Setting up

/etc/ssmtp/ssmtp.conf

```
# For My SMTP relay server
AuthUser=alang@domain.com
AuthPass=ThisIsPassword
FromLineOverride=YES
mailhub=smtp.domain.com:587
UseSTARTTLS=YES
```

???? sender ???

?? /etc/ssmtp/ssmtp.conf

```
FromLineOverride=NO
root=win.mis03
```

?? /etc/ssmtp/revaliases

```
root:win.mis03@msa.hinet.net
```

????

???: ?? ssmtp

```
$> ssmtp alang.hsu@gmail.com
```

```
To: alang.hsu@gmail.com
From: sender@domain.com
```

Subject: Test Mail

Hello, World

<Ctrl-D to Exit>

???: ?? mail

```
echo "Hello, World" | mail -s "Test Mail"
```

“ NOTE:

???????From ????????????????

???????????????????? sender ????????????????????? sender ???????